F

MODULES

SEWON'S Modular Valves are stack type valves, and require on piping. They not only rationalise system build, but they also meet the technical requirements for a variety of hydraulic systems. Stacking systems is a new era in hydraulics.
The valves have standardized mounting surface conforming to ISO4401 and optimum thickness for each size. Any hydraulic circuits can be easily composed by stacking the valves with mounting bolts. The valves can be used widely for hydraulic systems for various industries such as machine tools, special purpose machines, ships and steel mill equipment

Valve Type	Max. Operating Pressure MPa {kgf/cm²}	Maximum Flow L/min (1 2 3 5 7 10 20 30 50 70 100 200 300 500 700 1000)	Page
01 Series Modular Valves	31.5 {321}	01 01★	F-7
03 Series Modular Valves	25 {255}	03 03★	F-27
06 Series Modular Valves	25 {255}	06	F-45

★Maximum Flow for Throttle and Check Modular Valves.

Hydraulic Fluies

1. Fluid Type

Any type of hydraulic fluid listed in the table below can be used.

Petroleum Base Oils	Use fluies equivalent to ISO VG 32 or VG 46.
Synthetic Fluids	Use phosphate ester or polyol ester fluids. When phosphate ester fluid is used, prefix "F-" to the model number because seals (fluororubber) are required to be used.
Water-containing Fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your SEWON representatives in advance.

2. Recommended Fluid Viscosity and Temperature

Use hydraulic fluids which satisfy the both recommended viscosity and oil temperatures given in the table below.

Name	Viscosity	Temperature
01 Series Modular Valves 03 Series Modular Valves 06 Series Modular Valves	15~400mm²/s	-15℃~+70℃

3. Control of Contamination

Due caution must be paid to mainatining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valve.

Name	Contamination	Nominal Filtration
01 Series Modular Valves 03 Series Modular Valves 06 Series Modular Valves	Within NAS1638-Grade 12	25 μm or less

High Pressure, High Flow Rate Modular Valves

Features

1. Installation and mounting space can be minimized.
2. No special skill is required for assembly and any addition or alteration of the hydraulic circiut can be made quickly and easily.
3. Problems such as oil-leaks, vibration and noise which may be caused by piping are minimized, increasing the reliability of the hydraulic system.
4. Maintenance and system check-ups can be easily carried out as they are normally installed in stackable units.

Specifications

Series	Valve Size	Max. Operating Pressure MPa{kgf/cm²}	Max.Flow L/min	Number★2 of Stack
01 Series Modular Valve	1/8	31.5 {321}	35(60)★1	1~5★3
03 Series Modular Valve	3/8	25 {255}	70(120)★1	1~5
06 Series Modular Valve	3/4	25 {255}	500	

★1. The values in parentheses represent the max.flow rates for throttle modular valves(MSP) and throttle check modular valves(MSA/MSB/MAW).
★2. Solenoid operated directional valve is included in the number of stack.
★3. Solenoid operated directional valve is included in the number of stack. If the working pressure is above 25 MPa {255kgf/cm²}, the maximum number of larers in a stack is 4 including the solenoid operated directional valve.

Mounting Surface

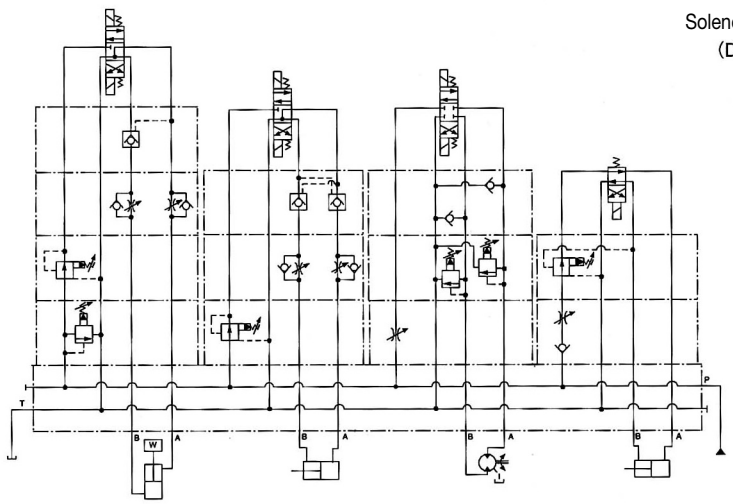
●01~10 Series

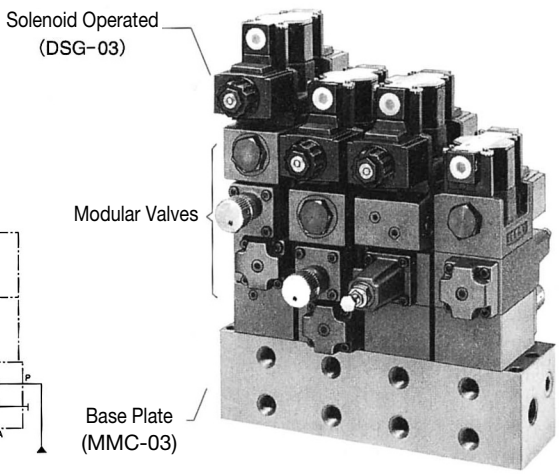
Mounting surface dimensions conform to ISO 4401(Hydraulic fluid power four port directional control valves mounting surface) as listed in the table below.

Name of Valve	ISO Mtg.Surface Code No.
01 Series Modular Valve	ISO 4401-AB-03-4-A
03 Series Modular Valve	ISO 4401-AC-05-4-A
06 Series Modular Valve	ISO 4401-AE-08-4-A

Stacking Example

●03 Series





Instructions

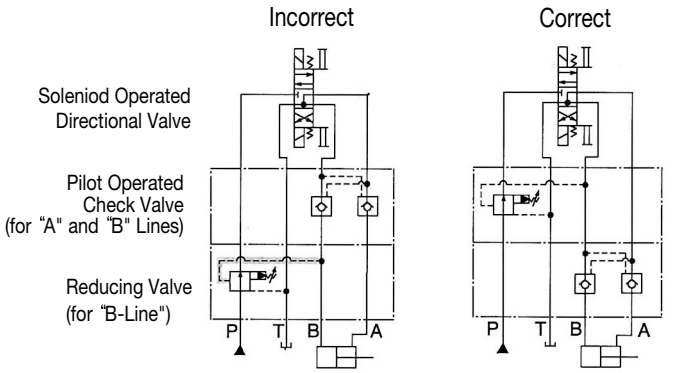
Caution in the selection of valves and circuit designing

The selection of modular valves, to suit a particular function or hydraulic circuit, are made in exactly the same way as conventional valves, taking into account of the flow and pressure of each valve to be used. In some cases, the stacking system may be restricted, so please refer to the following instructions for stacking sequence. Please note, that when designing a system using modular stacking valves, due consideration should be given to working space for future maintenance.

●Stacking sequence when using reducing valves (for "A" or "B" line) and pilot operated check valves.

Because reducing valves are spool type, there is an internal leakage. In the stacking sequence shown in the drawing left (incorrect), the cylinder moves due to leakage through the pilot pressure line .

Consequently, retaining the position of the cylinder using a pilot operated check valve becomes impossible. The stacking sequence shown in the drawing right (correct) is required in order to retain the cylinder position.

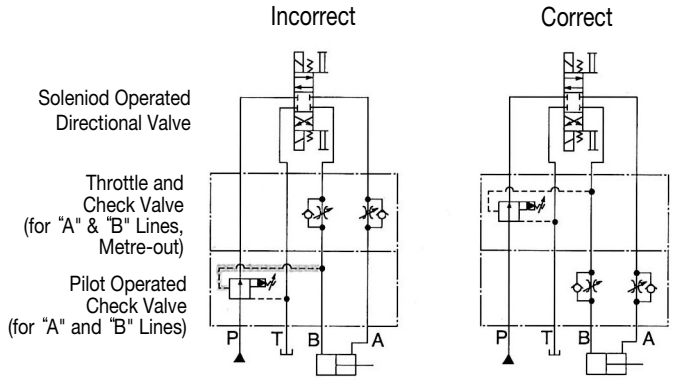


●Stacking sequence when using reducing valves (for "A" or "B" line) and throttle and check valves (for metre-out).

In B to T flow in the drawing left (incorrect). pressure is generated at part with a throttle effect of the throttle and check valve.

Depending upon the pressure reducing function which causes a shortage of output power of the cylinder and spoils the smooth operation of the cylinder.

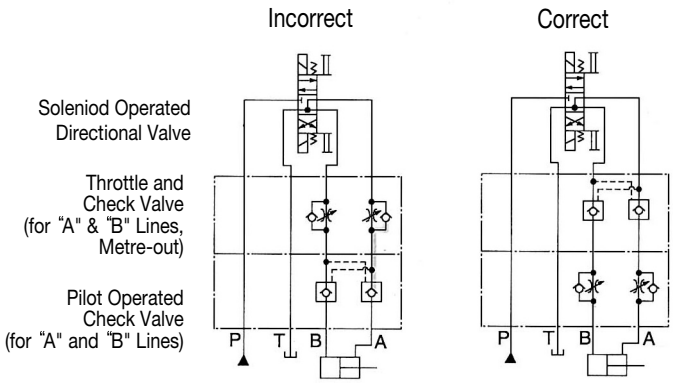
Therefore, stacking sequence in the drawing right(correct) is required in this combination



●Stacking sequence when using pilot operated check valves and throttle and check valves (for metre-out).

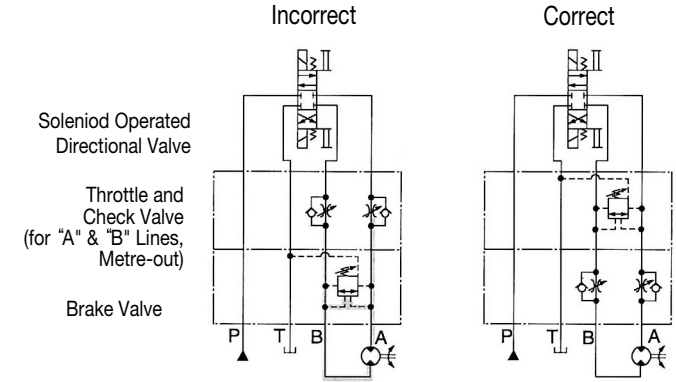
In A to T flow in the drawing left (incorrect). pressure is generated at part with a throttle effect of the throttle and check valve.

The pressure so generated acts to shut the pilot operated check valve and eventually creates an open and shut operation of the valve repeatedly which may cause the cylinder to have a knocking effect (the same effect will occur in the case of B to T flow). Therefore, the stacking sequence in the drawing right (correct) is required in this combination.



●Stacking sequence when using brake valves and throttle and check valves.

In the drawing left (incorrect), pressure is generated an part (a load pressure and a back pressure from throttle effect). For structual reasons of the breke valve, the load pressure and back pressure act to open the valve, therefore, the setting pressure should be more than the pressure equal to the load pressure plus back pressure (Pa+Pb). If the setting pressure is less than Pa+Pb, the brake valve acts and brakes the movement of the actuator in operation,this eventually reduces the speed of the actuator. On the contrary, if the setting pressure is made than Pa+Pb, shock may occur when braking the actuator since the setting pressure is too high against the load pressure. Therefore, the stacking sequence in the drawing right (cottect) is required in this combination.



Base Plates and Sub-Plates

When mounting the modular valves, use base plates and sub-plates specified below. If these base plates and the sub-plates are not used, ensure that the mounting surface has a good machined finish.

Series	Base Plates		Sub-Plates	
	Model Numbers	Page	Model Numbers	Page
01 Series	MMC-01-※-40	F-24	DSGM-01※-30	F-18
03 Series	MMC-03-T-※-21	F-42	DSGM-03※-40	F-32
06 Series		-	DHGM-06※-50	E-52

Mounting Bolts

Modular valves are mounted using stud bolts which are supplied in a kit form. When mounting, see the following table for tightening torque. After the test run, be sure to tighten again firmly within the specified torque.

Series	Bolt Kit Model Numbers	Tightening Torque Nm (in.lbs.)
01 Series	MBK-01-※-30	5~6 {0.5~0.6} (6~7 {0.6~0.7}) ★
03 Series	MBK-03-※-10	12~15 {1.2~1.5}
06 Series	MBK-06-※-30	50~60 {5.1~6.1}

★The valve range in parentheses represents the tightening torque requirements if the operating pressure is above 25 MPa{255kgf/cm²}

Assembly

Assembly should be carried out in clean conditions and in acciodance with the following procedure. Caetious attention should be paid to ensure that the interface of the valves are clean and free from dirt or other foreign materials.

●Assumbly Procedure:

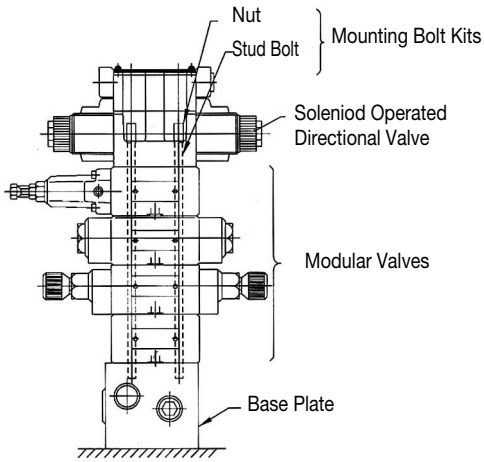
· 01-06 Series

1) Screw-in the four stud bolts (06 series: six stud bolts).fully into the tapped holes on the mounting surface of the specified base plate, sub- plate or manifold.

2) Stack the modular valves and solenoid operated directional valves in accordance with the hydraulic circuit, place the O-ring inserted surface face onto the base plate and make sure that the port arrangement of the modular valves are in the correct position before stacking the valves onto the stud bolts.

3) Align both the end of the valves stacked.

4)Screw-in the four nuts(06 series: six nuts) onto the stud bolts and tighten with the specified torque. After the test run, be sure to re-tighten the nuts firmly within the specified torque.



03 Series Modular Valves

Pressure Drop

Pressure Drop

Pressure drop curves of the modular valves are those based on viscosity of 35㎟/s and specific gravity of 0.850.
When using the modular valves in conditions other than the above mentioned, find the appropriate values referring to the following table and formula.

●For any other viscosity, multiply the factors in the table below.

Viscosity	mm²/s{cSt}	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

●For any other specific gravity(G′), the pressure drop(⊿P′) may be obtained from the following formula.

$$\Delta P' = \Delta P\ (G'/0.850)$$

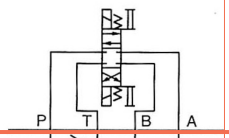
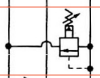
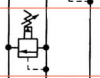
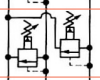
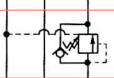
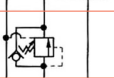
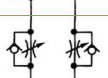
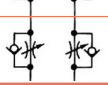
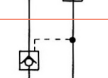
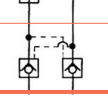
Interchangeability in Installation between Current and Design

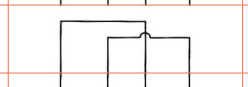
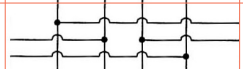
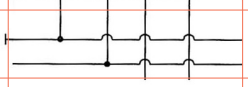
The model changed for the following models have been made.

Models		Model Numbers		Mtg. Inter-changeability	Main changes
		Current	New		
01 Series	Throttle Modular Valves	MSP-01-30	MSP-01-50	○	Modification for large flow use.
	Throttle and Check Modular Valves	MSB-01-※※-$\begin{matrix}A\\W\end{matrix}$ $\begin{matrix}40\\50\end{matrix}$	MSB-01-※※-$\begin{matrix}A\\W\end{matrix}$60	○	Improved Controllability and Operatability.
06 Series	Reducing Modular Valves	MR※-06-※-10	MR※-06-※-30	○	Modification for large flow use.
	Throttle and Check Modular Valves	MS※-06-※$\begin{matrix}L\\H\end{matrix}$-10	MS※-06-※-30	○	Modification for large flow use.
	Pilot Check and Modular Valve	MP※-06※-※-※-10	MP※-06※-※-※-30	○	Modification for large flow use.

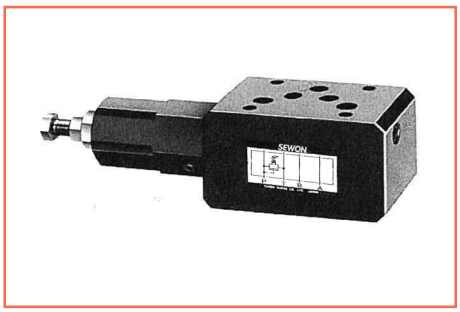
3/8 Modular Valves

Type of Modular Valve

Class	Model Numbers	Graphic Symbols	Page
	Solenoid Operated Directional Valve DSG-03-※※※-※-80		E-22
Pressure Control Valves	Relief Valves (for "P-Line") MBP-03-※-20		F-28
	Relief Valves (for "A-Line") MBA-03-※-20		F-28
	Relief Valves (for "B-Line") MBB-03-※-20		F-28
	Relief Valves (for "A&B-Line") MBW-03-※-20		F-28
	Reducing Valves (for "P-Line") MRP-03-※-20		F-30
	Reducing Valves (for "A-Line") MRA-03-※-20		F-30
	Reducing Valves (for "B-Line") MRB-03-※-20		F-30
	Sequence Valves (for "P-Line") MHP-03-※-20		F-33
	Counterbalance Valves (for "A-Line") MHA-03-※-20		F-33
	Counterbalance Valves (for "B-Line") MHB-03-※-20		F-33
Flow Control Valves	Throttle Valves (for "P-Line") MSP-03-30		F-35
	Throttle and Check Valves (for "A-Line", Meter-out) MSA-03-X-40		F-36
	Throttle and Check Valves (for "A-Line", Meter-in) MSA-03-Y-40		F-36
	Throttle and Check Valves (for "B-Line", Meter-out) MSB-03-X-40		F-36
	Throttle and Check Valves (for "B-Line", Meter-in) MSB-03-Y-40		F-36
	Throttle and Check Valves (for "A&B-Line", Meter-out) MSW-03-X-40		F-36
	Throttle and Check Valves (for "A&B-Line", Meter-in) MSW-03-Y-40		F-36
Directiond Control Valves	Check Valves (for "P-Line") MCP-03-※-10		F-38
	Check Valves (A 라인용) MCA-03-※-20		F-38
	Check Valves (for "B-Line") MCB-03-※-20		F-38
	Check Valves (for "T-Line") MCT-03※-10		F-38
	Pilot Operated Check Valves (for "A-Line") MPA-03-※-20		F-40
	Pilot Operated Check Valves (for "B-Line") MPB-03-※-20		F-40
	Pilot Operated Check Valves (for "A&B-Line") MPW-03-※-20		F-40

Class	Model Numbers	Graphic Symbols P T B A	Page
Modular Plates and Mounting Bolts	End Plates (Blocking Plates) MDC-03-A-10		F-41
	End Plates (Bypass Plates) MDC-03-B-10		F-41
	Connecting Plates MDS-03-10		F-40
	Base Plates MMC-03-T-※-21		F-42
	Bolt Kits MBK-03-※-10		F-44

Relief Modular Valves



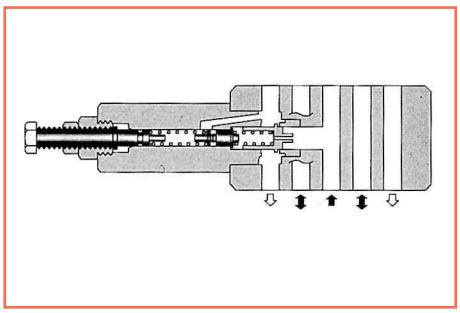
Ratings

Model Numbers	Max.Operating Pressure MPa{kgf/cm²}	Max.Flow L/min
MB※-03-※-20	25{255}	70

Model Number Designation

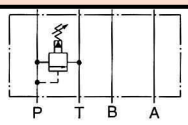
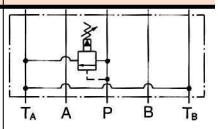
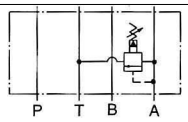
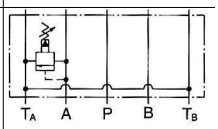
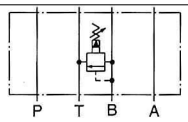
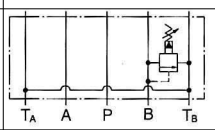
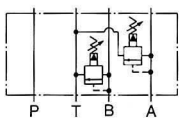
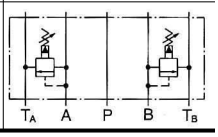
MBA	03	-B	-20
Series Number	Valve Size	Pres. Adj. Range MPa{kgf/cm²}	Design Number
MBP : Relief Valve for P-Line **MBA** : Relief Valve for A-Line **MBB**: Relief Valve for B-Line **MBW** : Relief Valve for A&B-Line	**03**	**B** : ★~7 {★~71.4} **H** : 3.5~25 {35.7~255}	**20**

★See the "Minimum Adjustment Pressure"



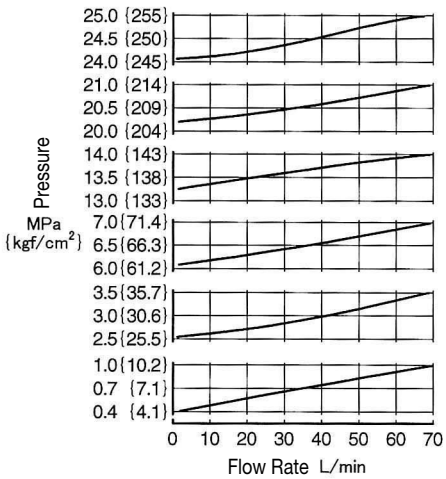
Instructions

- The minimum adjustment pressure equals the valve obtained from the minimum adjustment pressure characteristics plus the tank line back pressure of this page. This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base side of the modular valve.
- To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.
- In case of a small flow, the setting pressure may become unstable. To avoid this, refer to the minimum flow characteristic curve of the next page and use the valve within a range as shown with .

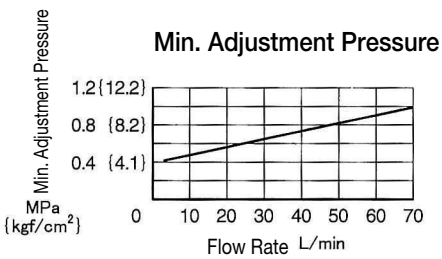
Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MBP-03		
MBA-03		
MBB-03		
MBW-03		

Typical Performance Characteristics

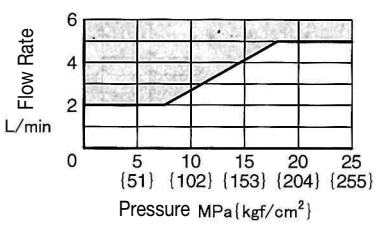
Nominal Override Characteristics



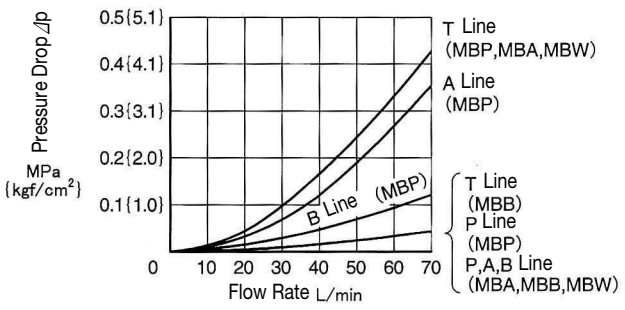
Min. Adjustment Pressure



Min. Flow vs. Adjustment Pressure

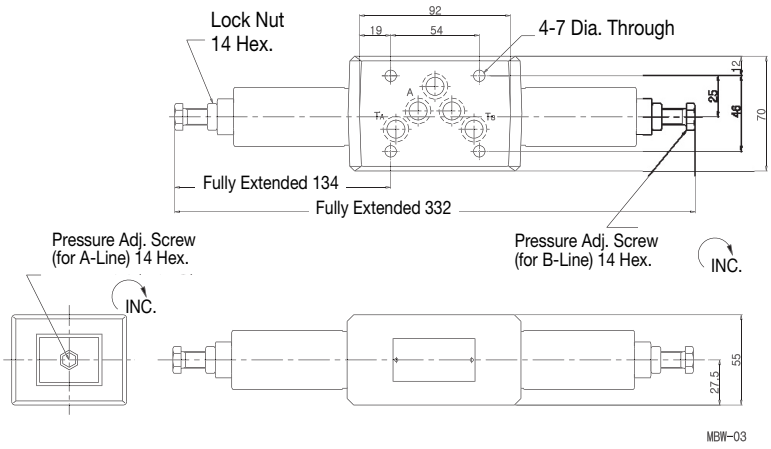


Pressure Drop



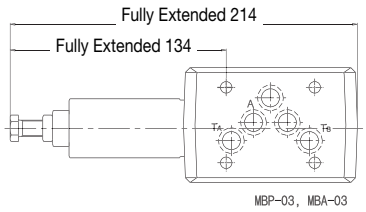
Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

MBW-03



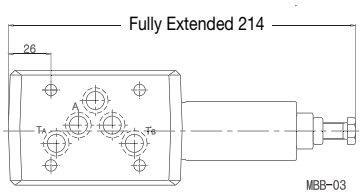
Approx. Mass. ····· 4.2kg

MBP-03,MBA-03



For other dimensions, refer to "MBW-03" drawing left.

MBB-03



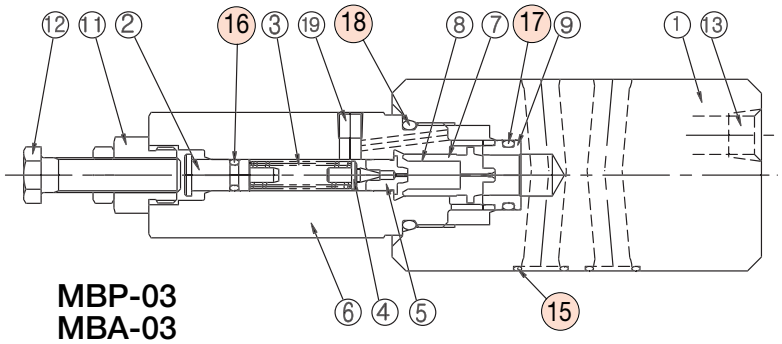
For other dimensions, refer to "MBW-03" drawing left.

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals

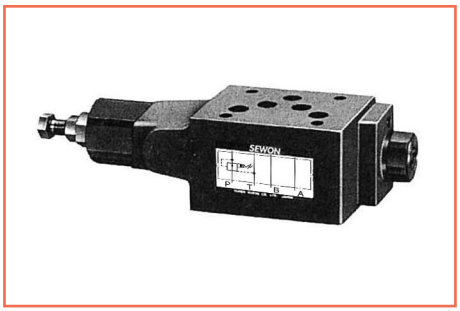
MBP-03
MBA-03
MBB-03
MBW-03

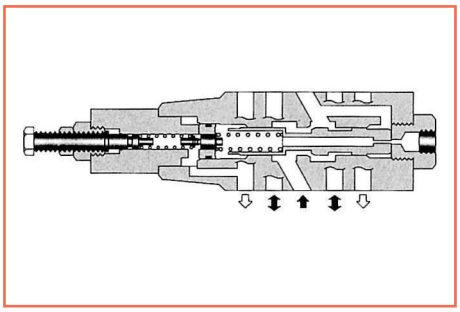


MBP-03
MBA-03

Item	Name of Parts	Part Numbers	Qty.			
			MBP-03	MBA-03	MBB-03	MBW-03
15	O-Ring	AS568-014(NBR,Hs90)	5	5	5	5
16	O-Ring	JIS 2401-1A-P6	1	1	1	2
17	O-Ring	JIS 2401-1B-P16	1	1	1	2
18	O-Ring	JIS 2401-1B-P26	1	1	1	2

Reducing Modular Valves





Ratings

Model Numbers	Max. Operating Pressure MPa{kgf/cm²}	Max. Flow L/min
MR※-03-※-20	25{255}	50★

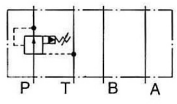
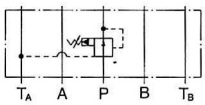
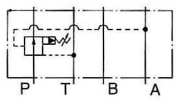
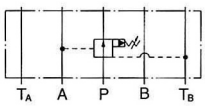
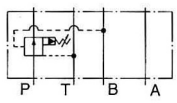
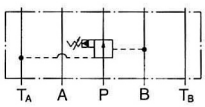
★In pressure adjustment range "H", if the pressure in the primary side is set above 20 MPa and the pressure in the secondary side is set below 10MPa, the maximum flow is limited to 40L/min

Model Number Designation

MRA	03	-B	-20
Series Number	Valve Size	Pres.Adj.Range MPa{kgf/cm²}	Design Number
MRP : Reducing Modular Valves for P-Line **MRA** : Reducing Modular Valves for A-Line **MRB** : Reducing Modular Valves for B-Line	**03**	**B** : 1~7 {10.2~71.4} **H** : 3.5~24.5 {35.7~250}	**20(Standard)** **2010(with Remote Control)**

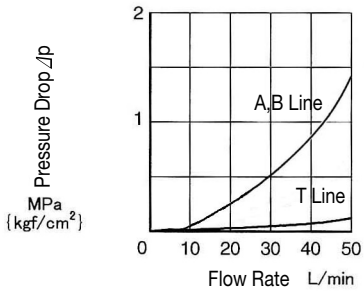
Instructions

- The minimum adjustment pressure equals the lower limit of either adjustment range(B,H) plus the tank line back pressure of this page. This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base side of the modular valve.
- To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MRP-03		
MRA-03		
MRB-03		

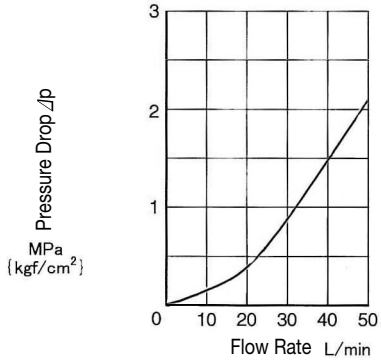
Typical Performance Characteristics

Pressure Drop

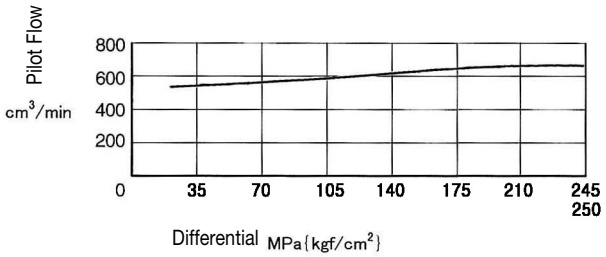


Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

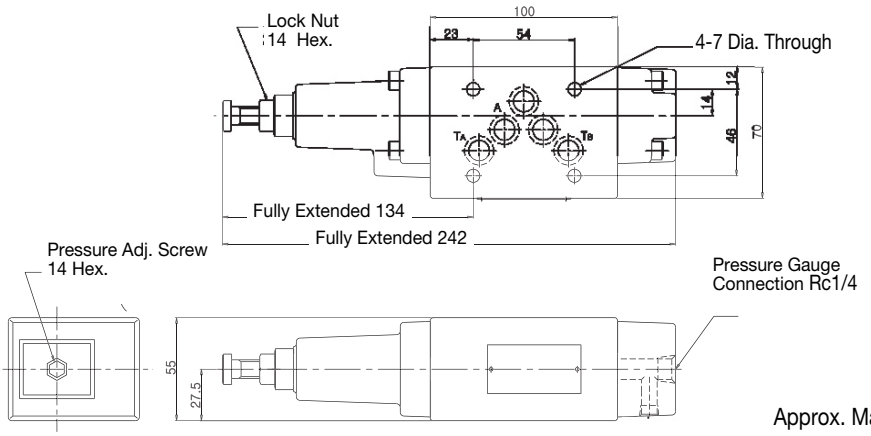
Nominal Override Characteristics



Pilot Flow

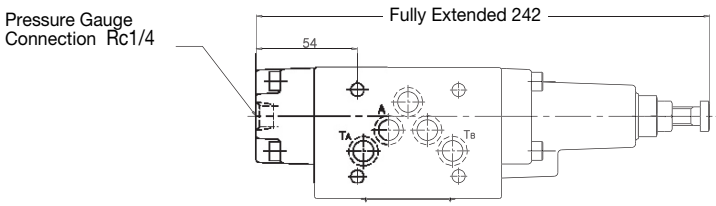


MRP-03
MRB-03



Approx. Mass. ····· 3.3kg

MRA-03



For other dimensions. refer to "MRP-03" drawing above.

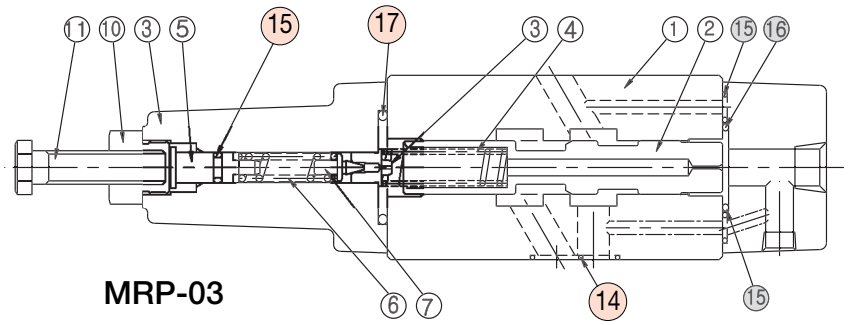
Approx. Mass. ····· 3.3kg

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals

MRP-03
MRA-03
MRB-03

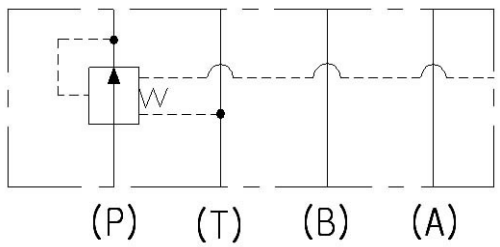


MRP-03

Item	Name of Parts	Part Numbers	Qty.
14	O-Ring	AS588-014(NBR,Hs90)	5
15	O-Ring	JIS 2401-1A-P6	3
16	O-Ring	JIS 2401-1B-P22	1
17	O-Ring	JIS 2401-1B-P28	1

MR : MR※-03-※-2010

■Graphic Symbols



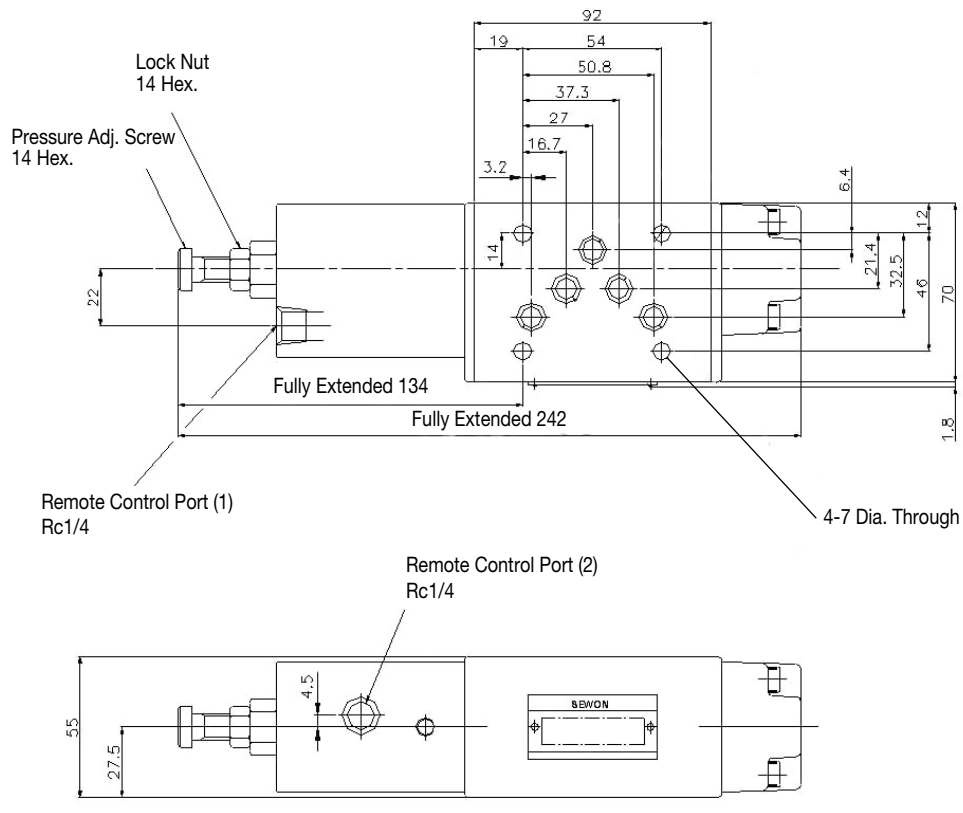
■Fesature

- With Remote Control Port (PT1/4) 2ea
- Use Remote Control Port of 1 or 2

■Specifications

- Max. Flow : 70 ℓ /min
- Max. Operatring Pressure : 25MPa {255kgf/cm²}
- Pres. Adj. Range : Standard Page of F-30 Page

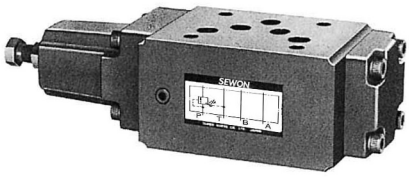
■DIMENSIONS IN MILLIMETRES



Sequence Modular Valves/ Counterbalance Modular Valves

Ratings

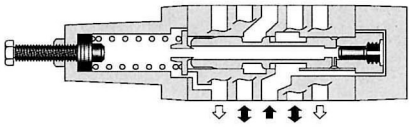
Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max.Flow L/min	Max. Free Flow L/min
MHP-03-※-20	25{255}	50	—
MH※-03-※-20			70



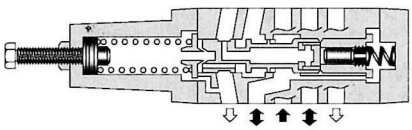
Model Number Designation

MHP	03	-C	-20
Series Number	Valve Size	Pres. Adj. Range MPa{kgf/cm²}	Design Number
MHP : Sequence Valve for P-Line	**03**	**N** : ★~1.8 {★~18.4} **A** : 1.8~3.5 {18.4~35.7} **B** : 3.5~7 {35.7~71.4} **C** : 7~14 {71.4~143}	**20**
MHA : Sequence Valve for A-Line **MHB** : Sequence Valve for B-Line			**20**

★See the "Minimum Adjustment Pressure"



MHP-03



MHA/MHB-03

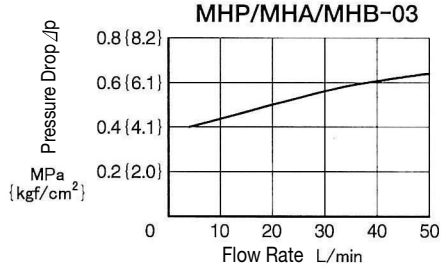
Instructions

- The minimum adjustment pressure equals the valve obtained from the minimum adjustment pressure characteristics plus the tank line back pressure of this page. This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base plate side of the modular valve.
- To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

Typical Performance Characteristics

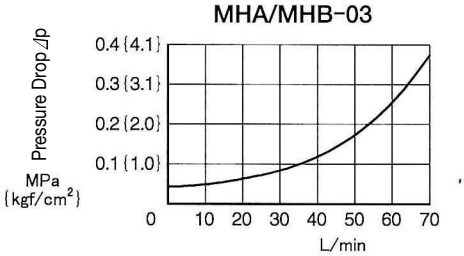
Min. Adjustment Pressure

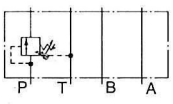
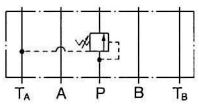
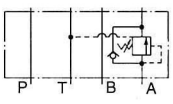
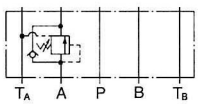
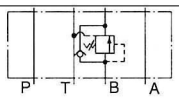
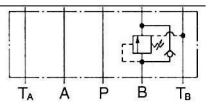
MHP/MHA/MHB-03



Pressure Drop for Free Flow

MHA/MHB-03

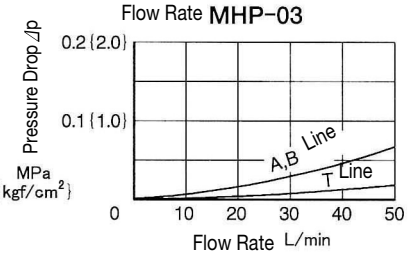


Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MHP-03		
MHA-03		
MHB-03		

Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

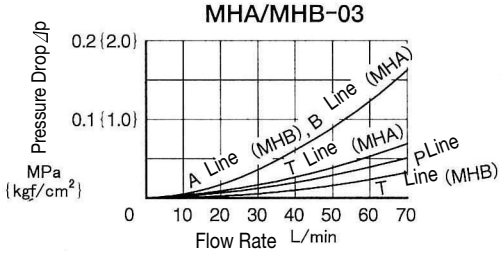
Pressure Drop

Flow Rate MHP-03

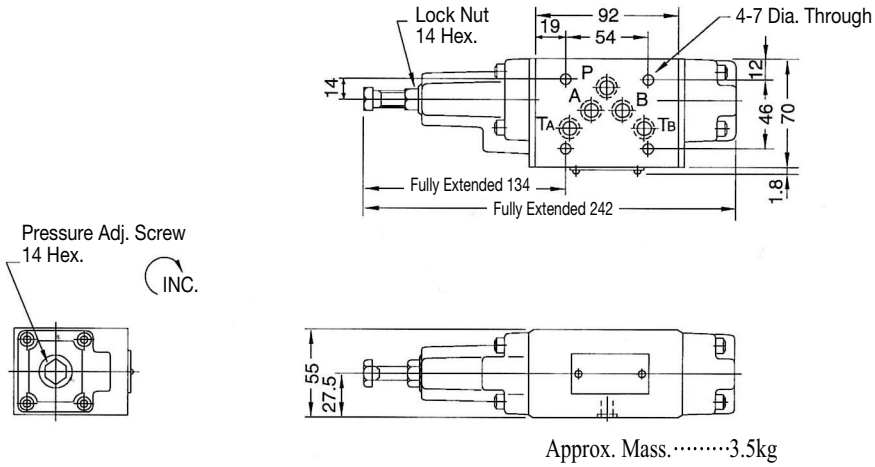


Pressure Drop

MHA/MHB-03

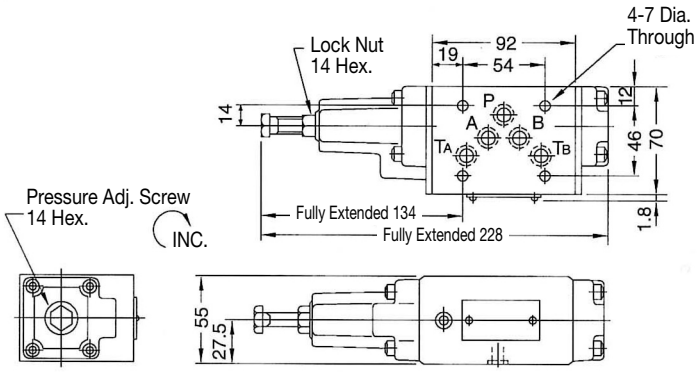


MHP-03



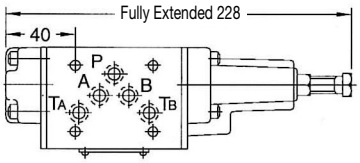
Approx. Mass.·····3.5kg

MHA-03



Approx. Mass.·····3.5kg

MHB-03



Approx. Mass.·····3.5kg

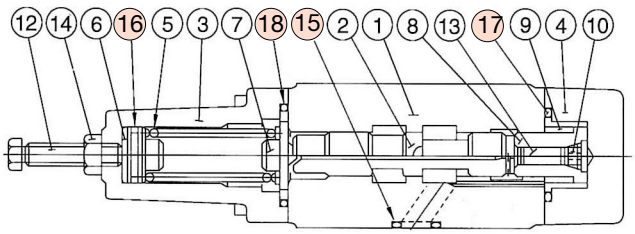
For other dimensions, refer to "MHP-03" drawing above.

CAUTION

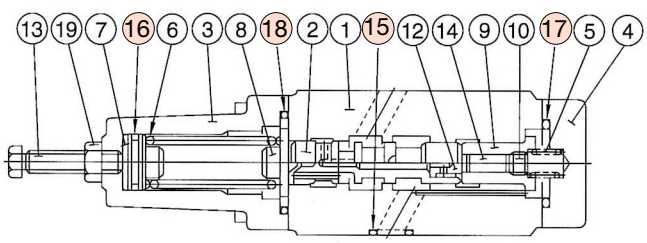
When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals

MHP-03, MHA-03, MHB-03



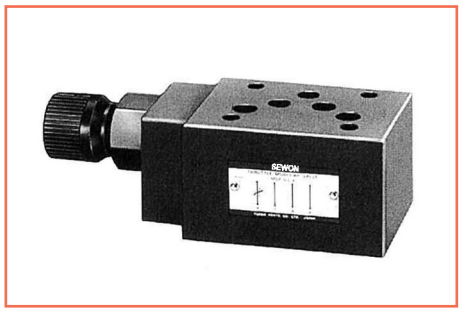
MHP-03

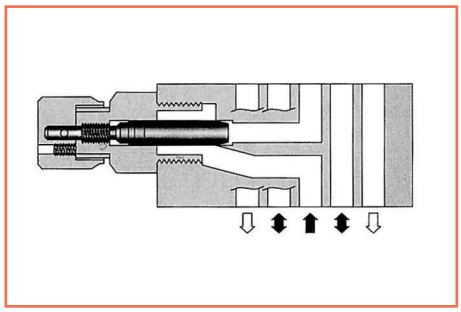


MHA-03

Item	Name of Parts	Part Numbers	Qty.
15	O-Ring	AS568-014(NBR, Hs90)	5
16	O-Ring	JIS B 2401-1A-P16	1
17	O-Ring	JIS B 2401-1B-P29	1
18	O-Ring	JIS B 2401-1B-P32	1

Throttle Modular Valves





Ratings

Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MSP-03-30	25{255}	70★

★Maximum flow decreases when the differential pressure is less than 1MPa{10.2kgf/cm²}. See "Pressure Drop at Throttle Fully Open"

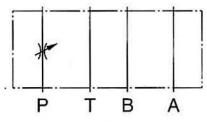
Model Number Designation

MSP	-03	-30
Series Number	Valve Size	Design Number
MSP : Throttle Valve for P-Line	**03**	**30**

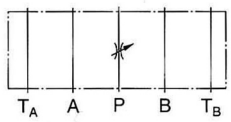
Instructions

● To make flow rate adjustment, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clockwise. Be sure to re-tighten the locking screw firmly after the adjustment of the flow rate.

Graphic Symbols



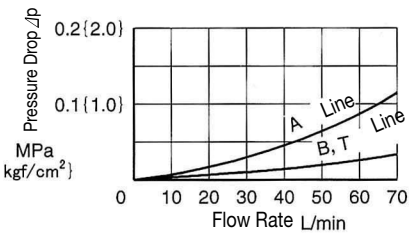
Detailed Graphic Symbols



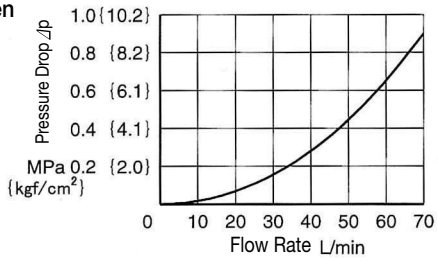
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

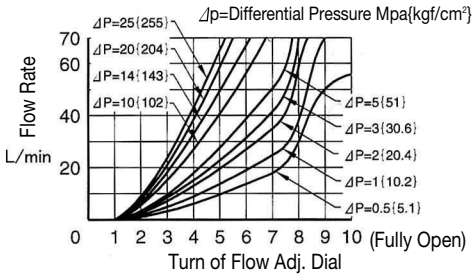
Pressure Drop at Throttle Fully Open



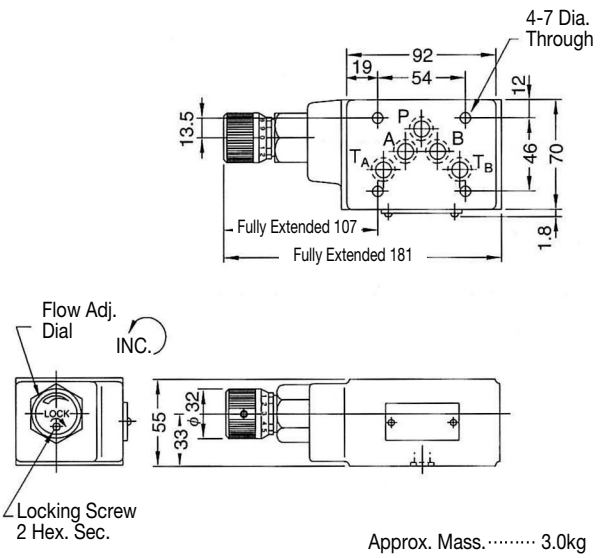
Pressure Drop at Throttle Fully Open



Metred Flow vs. Dial Position



MSP-03



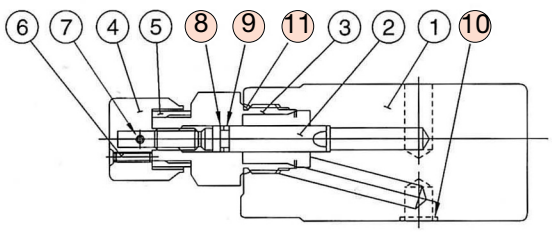
Approx. Mass····· 3.0kg

List of Seals

MSP-03

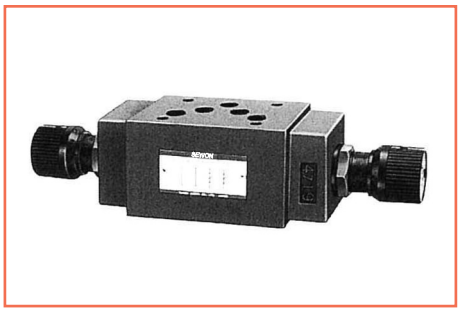
⚠ CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



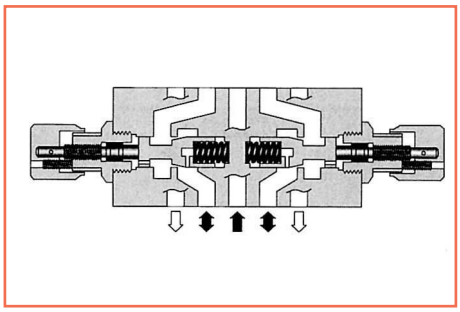
Item	Name of Parts	Part Numbers	Qty.
8	Backup Ring	900-VK411915-2	1
9	O-Ring	JIS B 2401-1A-P7	1
10	O-Ring	AS568-014(NBR, Hs90)	5
11	O-Ring	JIS B 2401-1B-P24	1

Check and Throttle Modular Valves



Ratings

Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MS※-03-※-40	25{255}	120



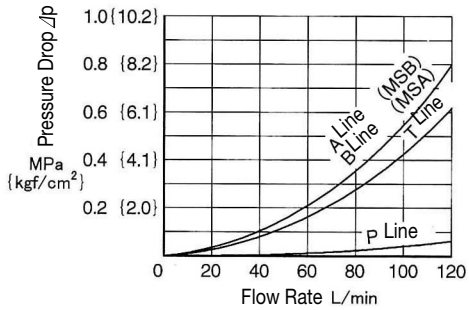
Model Number Designation

MSA	-03	-X	-40
Series Number	Valve Size	Direction of Flow	Design Number
MSA :Throttle and Check Valve for A-Line **MSB** :Throttle and Check Valve for B-Line **MSW** :Throttle and Check Valve for A&B-Line	**03**	**X** : Metre-out **Y** : Metre-in	**40**

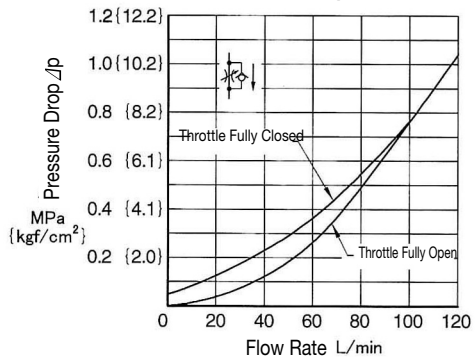
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

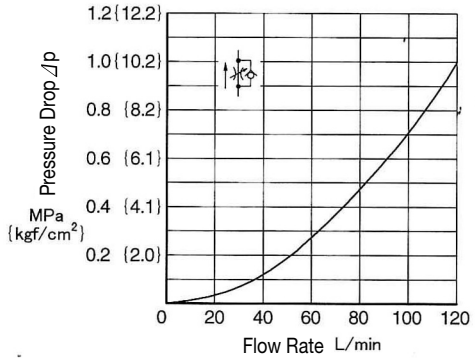
Pressure Drop

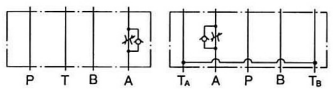
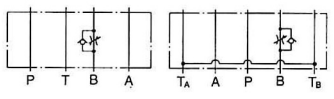
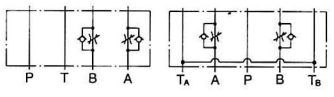
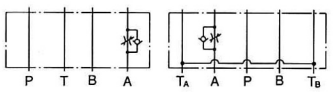
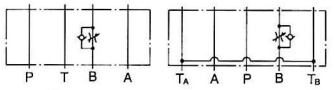
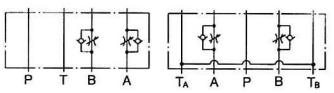


Pressure Drop for Free Flow

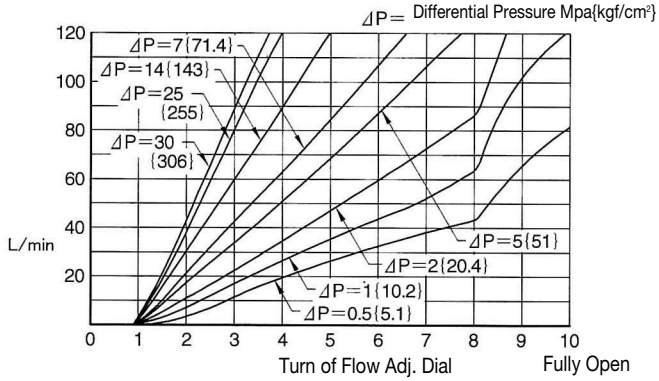


Pressure Drop at Throttle Fully Open



Model No.	Graphic Symbols / Detailed Graphic Symbols
	Metre-out
MSA-03 -X	
MSB-03 -X	
MSW-03 -X	
Model No.	Metre-in
MSA-03 -Y	
MSB-03 -Y	
MSW-03 -Y	

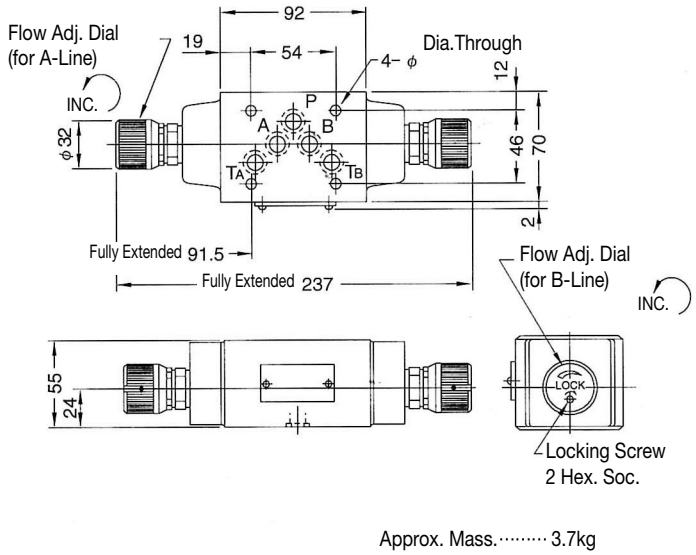
Metred Flow vs. Dial Position



Instructions

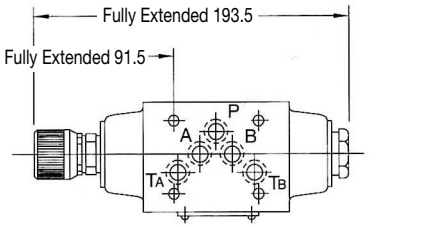
- To make flow rate adjustment, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clockwise. Be sure to re-tighten the locking screw firmly after the adjustment of the flow rate.

MSW-03-$^{X}_{Y}$



Approx. Mass.····· 3.7kg

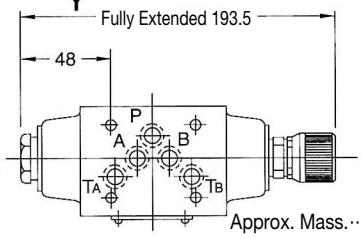
MSA-03-$^{X}_{Y}$



Approx. Mass.·····3.5kg

For other dimensions, refer to "MSW-03" drawing left.

MSB-03-$^{X}_{Y}$



Approx. Mass.····· 3.5kg

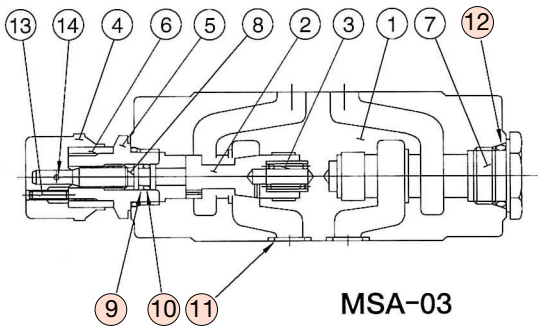
For other dimensions, refer to "MSW-03" drawing left.

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals

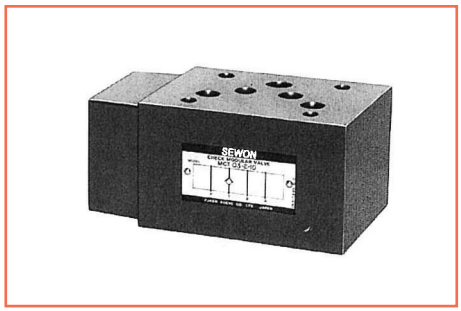
MSA-03
MSB-03
MSW-03

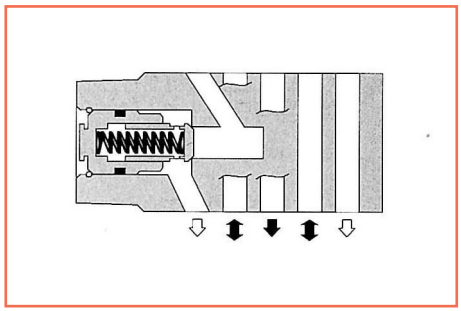


MSA-03

Item	Name of Parts	Part Numbers	Qty.		
			MSA-03	MSB-03	MSW-03
9	Backup Ring	JIS B 2407-T2-P8	1	1	2
10	O-Ring	JIS B 2401-1A-P8	1	1	2
11	O-Ring	AS568-014(NBR,Hs90)	5	5	5
12	O-Ring	JIS B 2401-1B-P24	2	2	2

Check Modular Valves





Ratings

Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MCP-03-※-10	25{255}	70
MCA-03-※-20		
MCB-03-※-20		
MCT-03-※-10		

Model Number Designation

MCP	-03	-O	-10
Series Number	Valve Size	Cracking Pressure MPa{kgf/cm²}	Design Number
MCP: Check Valve for P-Line	**03**	**0** : 0.035{0.36} **2** : 0.2{2.0}	**10**
MCA: Check Valve for A-Line **MCB**: Check Valve for B-Line			**20**
MCT : Check Valve for T-Line			**10**

Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MCP-03	P T B A	T_A A P B T_B
MCA-03	P T B A	T_A A P B T_B
MCB-03	P T B A	T_A A P B T_B
MCT-03	P T B A	T_A A P B T_B

Instructions

● Tank Line Used

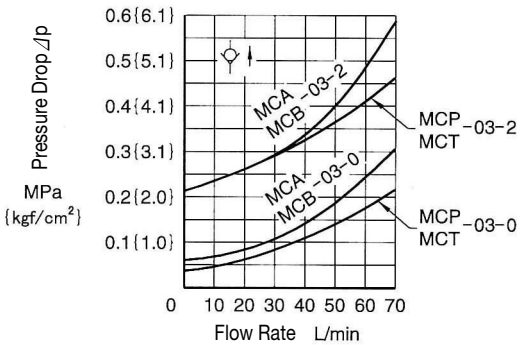
Check valve function of MCT-03 is included in TA-Line.

Therefore, the tank line for a circuit that uses this valve must be TA-line.

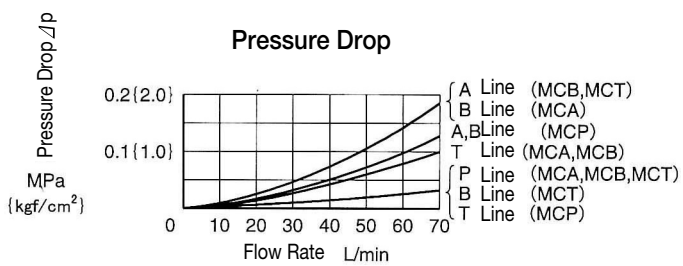
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35mm²/s,
Specific Gravity 0.850

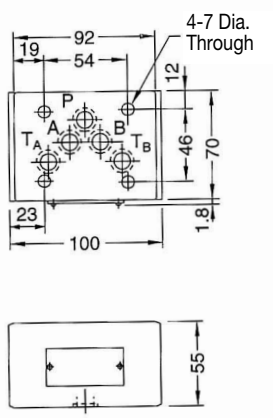
Pressure Drop for Free Flow



Pressure Drop

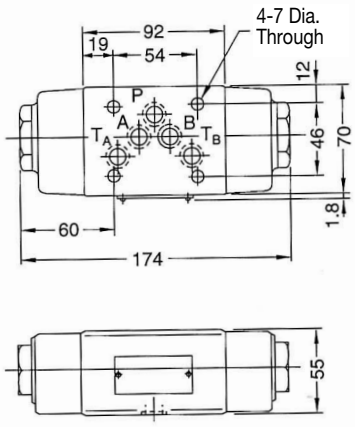


MCP-03



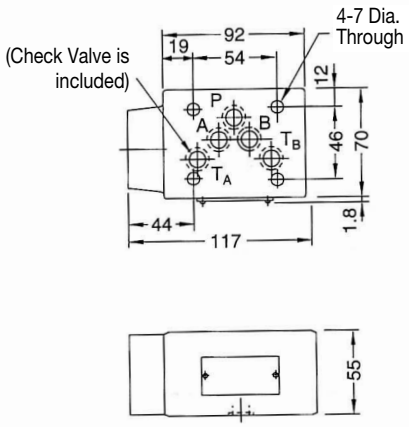
Approx. Mass.·····2.5kg

MCA-03
MCB-03



Approx. Mass.····· 2.5kg

MCT-03



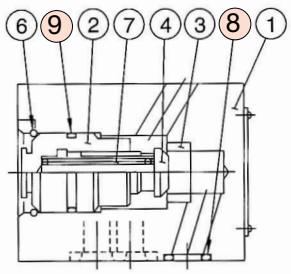
Approx. Mass.·····2.5kg

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

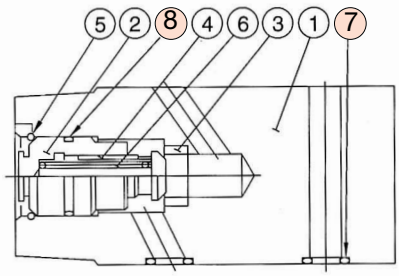
List of Seals

MCP-03



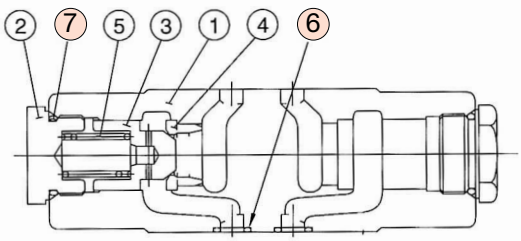
Item	Name of Parts	Part Numbers	Qty.
8	O-Ring	AS568-014(NBR, Hs90)	5
9	O-Ring	JIS B 2401-1B-P21	1

MCT-03



Item	Name of Parts	Part Numbers	Qty.
7	O-Ring	AS568-014(NBR, Hs90)	5
8	O-Ring	JIS B 2401-1B-P21	1

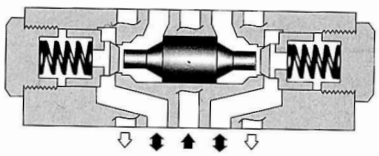
MCA-03
MCB-03



MCA-03

Item	Name of Parts	Part Numbers	Qty.
6	O-Ring	AS568-014(NBR, Hs90)	5
7	O-Ring	JIS B 2401-1B-P24	2

Pilot Operated Check Modular Valves



Ratings

Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MP※-03-※-20	25{255}	70

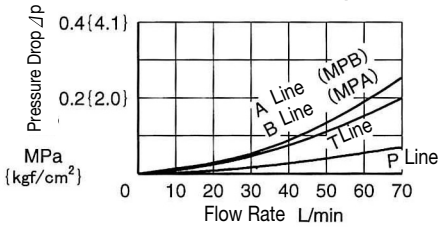
Model Number Designation

MPA	-03	-2	-20
Series Number	Valve Size	Cracking Pressure MPa {kgf/cm²}	Design Number
MPA : Pilot Operated Check Valve for A-Line **MPB** : Pilot Operated Check Valve for B-Line **MPW** : Pilot Operated Check Valve for A&B-Line	**03**	**2** : 0.2{2.0} **4** : 0.4{4.1}	**20(Standard)** **2001(Low Pressure Operated Type)**

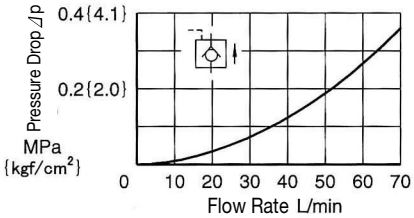
Typical Performance Characteristics

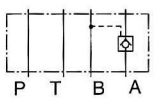
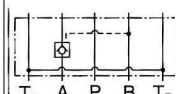
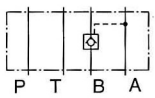
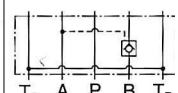
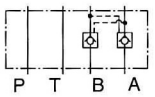
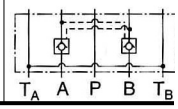
Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

Pressure Drop

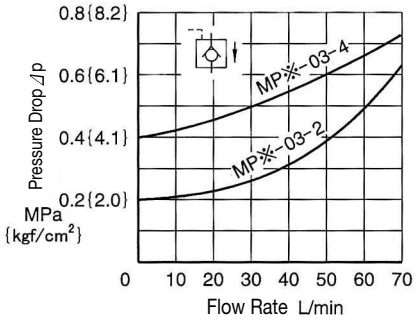


Pressure Drop for Reversed Controlled Flow

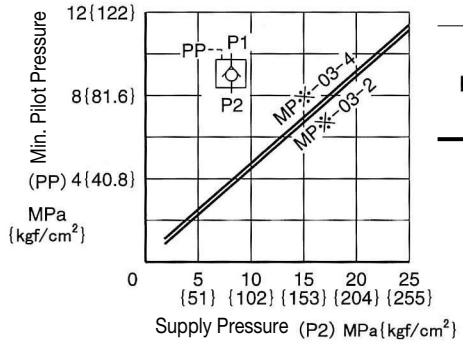


Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MPA-03		
MPB-03		
MPW-03		

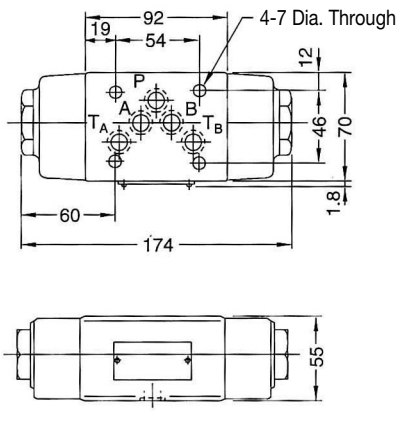
Pressure Drop for Free Flow



Min. Pilot Pressure



MPA-03
MPB-03
MPW-03



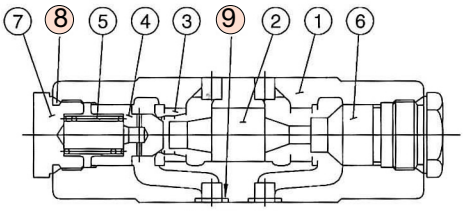
Approx. Mass.·····3.5kg

List of Seals

MPA-03
MPB-03
MPW-03

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



MPA-03

Item	Name of Parts	Part Numbers	Qty.
8	O-Ring	JIS B 2401-1B-P24	2
9	O-Ring	AS568-014(NBR, Hs90)	5

End Plates

Blocking Plates are used for auxiliary mounting surface or for closing unnecessary circuits.
Bypass plates are used for one-way flow circuit that requires no solenoid operated directional valves.

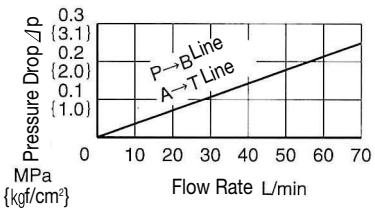
Ratings

Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MDC-03-※-10	25{255}	70

Model Number Designation

MDC	-03	-A	-10
Series Number	Valve Size	Type of Plate	Design Number
MDC : End Plate	**03**	**A** : Blocking Plate **B** : Bypass Plate	**10**

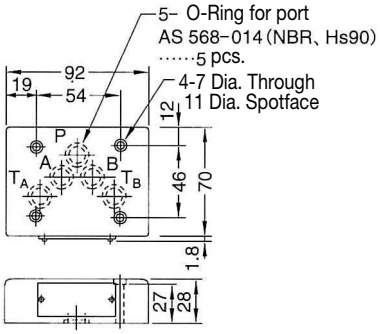
Typical Performance Characteristics



Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MDC-03 -A	P T B A	T_A A P B T_B
MDC-03 -B	P T B A	T_A A P B T_B

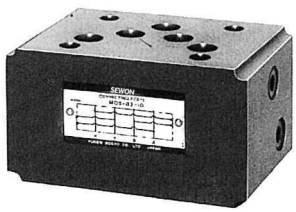
Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850

MDC-03



Approx. Mass. ····· 1.2kg

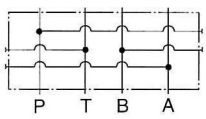
Connecting Plates



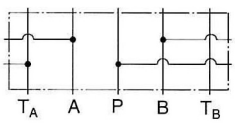
Model Number Designation

MDS	-03	-10
Series Number	Valve Size	Design Number
MDS : Connecting Plate	**03**	**10**

KS Graphic Symbols



Detailed Graphic Symbols

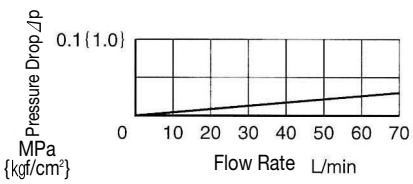


Ratings

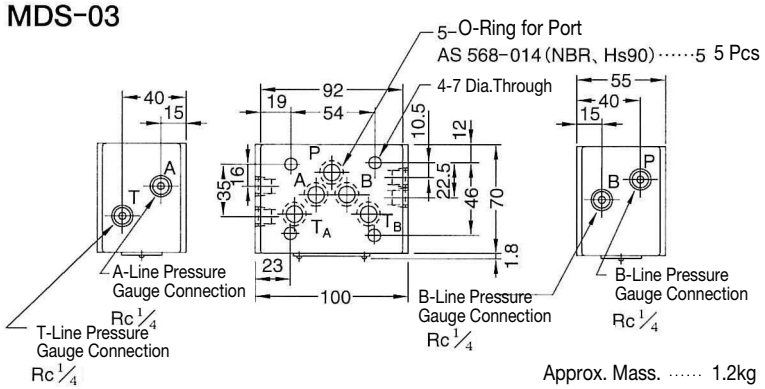
Model Numbers	Max. Operating Pressure Mpa{kgf/cm²}	Max. Flow L/min
MDS-03-10	25{255}	70

Typical Performance Characteristics

Hydraulic Fluid:Viscosity 35mm²/s, Specific Gravity 0.850



MDS-03

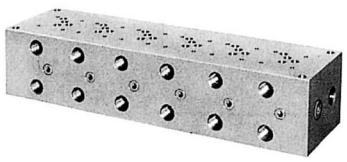


Approx. Mass. ····· 1.2kg

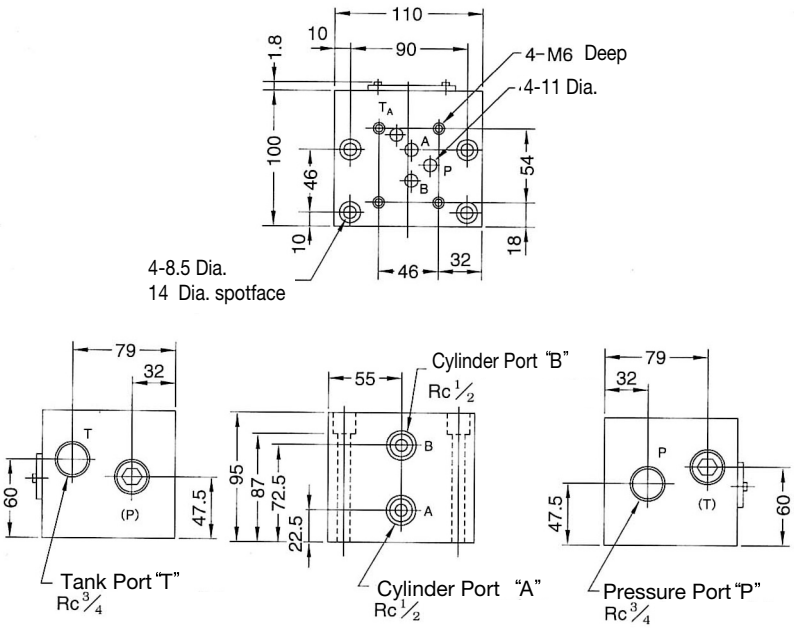
Base Plates For Modular Valves

Model Number Designation

MMC	-03	-T	-6	-21
Series Number	Valve Size	Type of Connection	Number of Station	Design Number
MMC : Base Plates	**03**	**T**:Threaded Connection	**1** :1Station **5** :5Station **2** :2Station **6** :6Station **3** :3Station **7** :7Station 4 :4Station	**21**



MMC-03-T-1

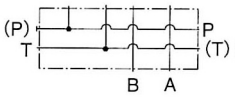


Approx. Mass ····· 8.5kg

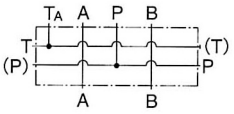
Specifications

Max. Operating Pressure····· 25MPa{255kgf/cm²}

KS Graphic Symbols

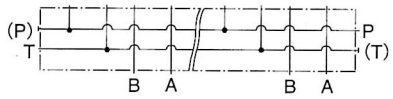


Detailed Graphic Symbols



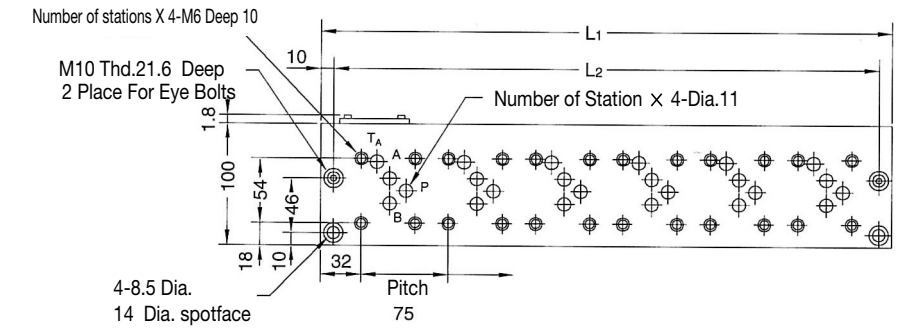
MMC-03-T-1

KS Graphic Symbols

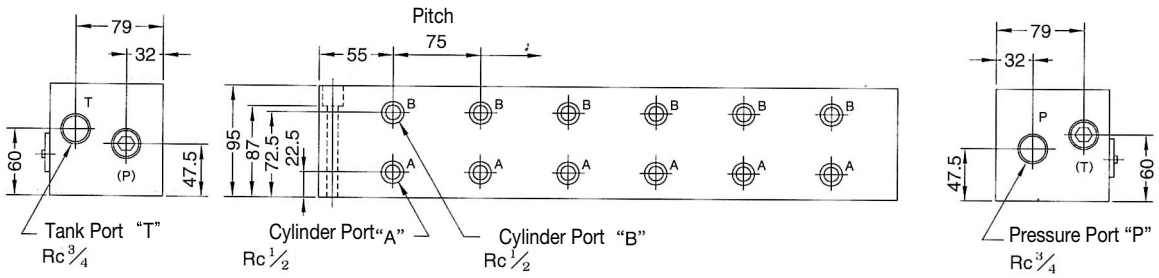


MMC-03-T-2~7

MMC-03-T-2~7

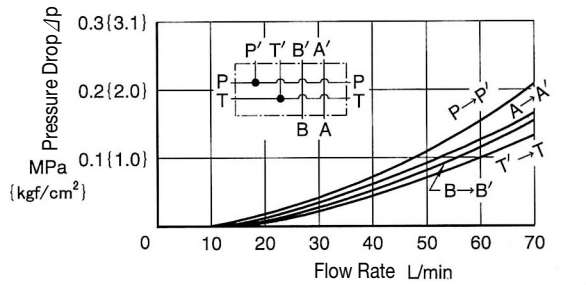


Design Number	L1	L2	Approx. Mass kg
MMC-03-T-2	185	165	14
MMC-03-T-3	260	240	19.5
MMC-03-T-4	335	315	25
MMC-03-T-5	410	390	30.5
MMC-03-T-6	485	465	36
MMC-03-T-7	560	540	41



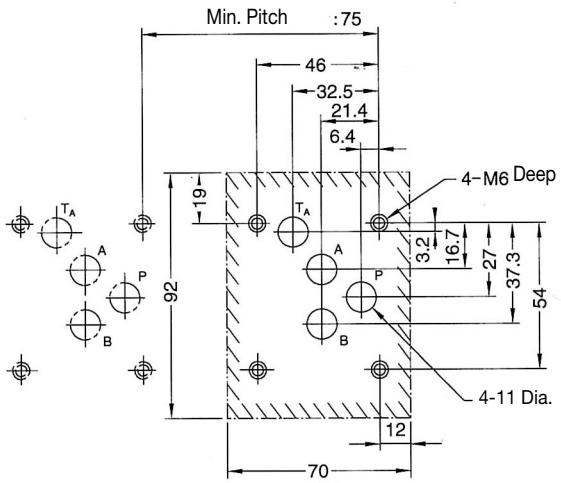
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35mm²/s, Specific Gravity 0.850



Mounting Surface Dimensions for 3/8 Modular Valve

When the standard base plate(MMC-03) is not used.
the following mounting surface must be prepared.
Also, the mounting surface must have a good machined finish.

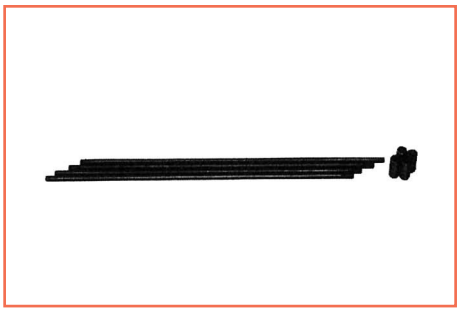


Instructions

- Although two ports are provided for both pressure port "P" and tank port "T", either may be used.
  However, the ports having (P) or (T) in the drawing are normally plugged. Remove the plugs of ports when they are used. Make sure that the ports that are not currently used are properly plugged.

Mounting Bolt Kits

Valves are mounted with four stud bolts.Valve combination varies according to the circuit type. Hence, the mounting bolt kits are available on a combination type basis. When ordering the bolt kit, be sure to give the bolt kit model number from the table below.



Model Number Designation

MBK	-03	-04	-10
Series	Size of Modular Valve	Bolt Number	Design Number
MBK:Bolt kits for Modular Valves	**03**	**01,02,03,04,05**	**10**

Bolt kits Selection Chart

Model Numbers	Quantity of valves to be stacked			Approx. Mass g
	Solenoid Operated Directional Valve (DSG-03)	End Plate (MDC-03)	Modular Valve & Connecting plate (M※※-03)	
MBK-03-01-10	1	0	1	120
	0	1		
MBK-03-02-10	1	0	2	160
	0	1		
MBK-03-03-10	1	0	3	200
	0	1		
MBK-03-04-10	1	0	4	240
	0	1		
MBK-03-05-10	1★	0	0	40
	0	1		

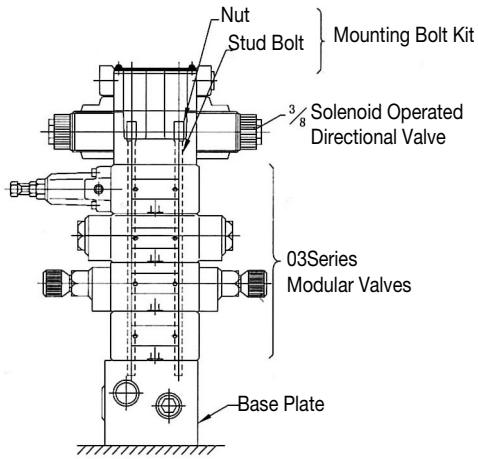
★ The Solenoid operated direcional valve comes with mounting bolts.

Bolt Kit Composition

Stud Bolt ·····4Pcs. } 1Set
Nut·····4Pcs. }

Note: In case of bolt kit model number having "05", four hexagon socket head cap screws only.

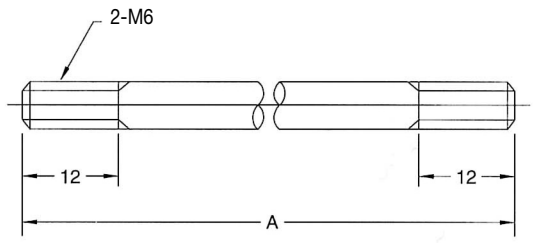
Tightening Torque···12~15Nm{1.2~1.5kgf · m}



Stacking Example

MBK-03

Stud Bolt



Model Numbers	Amm
01	103
02	158
03	213
04	268
05	Hexagon Socket head screw M6×35L

Nut